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As part of the Walter Reed Army Institute of Research (WRAIR) program to model soldier stress, health, and performance, stressors are analyzed across a variety of environments in terms of their impact on military personnel. Military stressors occur in three major environments: garrison, training exercises and deployments. Many of these stressors are similar to those found in non-military work settings but others are also relatively unique. This paper reviews the major stressors faced by military personnel across all three environments with an emphasis on recent research in each of these areas. Work stressors include work overload, unpredictability, role stressors, and performance evaluation. Other potential military-specific stressors include exposure to potentially traumatizing events such as experiencing threats to one's safety, being exposed to human suffering or death, and perpetrating harm on others, and stressors with deployment, including austere living conditions, boredom and family separation. Findings from a recent study with Homeland Defense soldiers highlight the importance of identifying and understanding occupational stressors during a real-world mission. By combining concepts from civilian occupational stress research with the unique challenges confronting military personnel, a comprehensive military model of stress and its consequences can be developed.

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RUNNING HEAD: Military Occupational Stressors

Military Occupational Stressors in Garrison, Training, and Deployed Environments

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Military Occupational Stressors in Garrison, Training, and Deployed Environments

In studying the link between stressors and outcomes in occupational health research, a key starting point is a comprehensive assessment of the relevant stressors. As part of the Walter Reed Army Institute of Research (WRAIR) program to model soldier stress, health, and performance, stressors are analyzed across a variety of environments in terms of their impact on military personnel. According to Lazarus and Folkman (1984), an event or situation is considered stressful when perceived by the individual as taxing or exceeding coping resources, competencies, values, or self-concept. Military stressors occur in three major environments: garrison, training exercises and deployments. Many of these stressors are similar to those found in non-military work settings but others are also relatively unique. This presentation reviews the major stressors faced by military personnel across all three environments with an emphasis on recent research in each of these areas. Work stressors include work overload, unpredictability, role stressors, and performance evaluation. Other potential military-specific stressors include exposure to potentially traumatizing events such as experiencing threats to one's safety, being exposed to human suffering or death, and perpetrating harm on others, and stressors with deployment, including austere living conditions, boredom and family separation.

Findings from a recent study with Homeland Defense soldiers highlight the importance of identifying and understanding occupational stressors during a real-world mission. In terms of continuing WRAIR research identifying military stressors, several tasks remain priorities: 1) refine measures of stressors for use across operations and environments; 2) continue to use a combination of interview and survey data in order to identify mission-specific stressors and their scope; and 3) regard the occupational stressors associated with military service within a multidimensional framework that includes each military environment. By combining concepts from civilian occupational stress research with the unique challenges confronting military personnel, a comprehensive military model of stress and its consequences can be developed.

Military Occupational Stressors in Garrison, Training, and Deployed Environments

In studying the link between stressors and outcomes in occupational health research, a key starting point is a comprehensive assessment of the relevant stressors. In the Soldier Adaptation Model (Bliese & Castro, in press) developed at the Walter Reed Army Institute of Research (WRAIR), stressors, moderators, health, and performance are analyzed across a variety of military environments: garrison (i.e. home station), training exercises, and deployments. For military personnel, the stressors confronting them are both similar to stressors encountered by their civilian counterparts and relatively unique to the Armed Forces. This paper reviews the major stressors faced by military personnel with an emphasis on recent research at the WRAIR.

Stress Theory

Typically, stressors are considered some event external to the individual that the individual perceives as taxing or exceeding his or her available physical, psychological and spiritual resources (Lazarus & Folkman, 1984). These events are likely to be experienced as placing a greater load on the resources of an individual when the events are novel, unpredictable, ambiguous, imminent, unyielding, and uncertain. Following exposure to such an event, individuals appraise the degree to which their resources are exceeded (Lazarus & Folkman, 1984). Individuals make this appraisal through two basic processes: primary appraisal determines the degree to which a threat is present, and secondary appraisal determines the options for coping with that external event. As a result of such appraisal, the individual experiences a stress response involving psychological and physiological activation that can vary in intensity and duration as a means of managing the threat or demand. How any one individual experiences these events, however, will depend on that individual's personal history, coping, appraisals, and external supports.

Certain types of stressors are typically identified in the field of occupational stress research. In order to be both comprehensive and efficient, Jex (1998) proposed several major occupational stress categories, most of which WRAIR researchers have also pursued. In delineating stressors in the workplace, Jex reviewed workload, role, interpersonal conflict, situational constraints, perceived and traumatic job stressors. Several WRAIR studies have specifically emphasized many of these stressors, including workload, role, and traumatic job stressors, which are discussed in detail below. Other WRAIR studies have included assessments of interpersonal conflict and situational or resource constraints. Perceived control, described by Jex as the degree to which the individual is involved in decision making and perceives he or she has job autonomy, has also been assessed in WRAIR research, but is treated as a moderator in the Soldier Adaptation Model (see also Karasek 1979) and beyond the scope of this paper.

Of course, individuals in a work context experience many stressors that are in fact unrelated to work. Marital conflict and family health problems are but two examples of such external events that can affect well-being and performance. Such stressors occur across a variety of occupational settings and while important in accounting for the full set of stressors encountered by soldiers, are not specifically addressed in this paper. Rather,

the emphasis in this paper as well as the research conducted by WRAIR in the past decade is on occupationally-related stressors that have the potential to be either reduced or moderated by individual coping strategies, leader behaviors, and/or organizational policies.

Military Stressors

Just prior to the end of the cold war, much of WRAIR's research emphasized such issues as drug use in the Army (Manning & Ingraham, 1983), traumatic stress (Wright, Ursano, Bartone, & Ingraham, 1990), battle stress casualties (Schneider & Luscomb, 1984), and identification of factors associated with unit cohesion (see Bartone, Johnsen, Eid, Brun, & Laberg, 2002 for a review). Since the end of the Cold War, however, research conducted by the WRAIR has emphasized both general work-related stressors and stressors specific to the training and deployed environments. In a review of the stressors facing military personnel, we draw from recent studies including an examination of workload since the military drawdown of the early 1990s, military officers in a training center, and soldiers deployed on peacekeeping missions in the Balkans, on combat missions, and mobilized in support of Homeland Defense.

There are many potential approaches to organizing military stressors into a coherent framework. For example, one method would be to describe the presence of stressors in each of the three basic military environments: garrison, in training, and on deployment. Given the potential for overlap across each of these environments, we organized the following discussion of military stressors into two basic components: general work stressors and stressors specific to the military. As in most cases of categorization, there is potential for overlap and the list is by no means intended to be exhaustive. Rather, the goal here is to highlight stressors that have come to the attention of WRAIR researchers over the last decade, stressors that are relevant to soldiers and to understanding the dynamics inherent in any attempt to model soldier adaptation.

General Work Stressors

Work Overload

Of all the stressors facing military personnel, arguably one that has been of greatest concern to military leaders is the issue of workload. Since the end of the Cold War, the number of military missions has increased while the number of military personnel has decreased (Castro & Adler, 1999). In the civilian literature, the stress from workload is an equally important topic and identified by Jex (1998) as one of the fundamental occupational stressors. The military equivalent of workload is epitomized by the concept Operations Tempo (OPTEMPO) which includes both the day-to-day demands (e.g., daily work hours) that occur during the course of a duty day as well as long-range work requirements. In the military, these long-range work requirements can include training that requires extended periods away from home, conducting guard duty on varying shifts, and deploying on combat, humanitarian and/or peacekeeping missions. Thus, the concept of workload is consistent with civilian literature but the content of such workload is specific to a military context. Furthermore, the workload occurs in the

context of a military culture that holds that being a soldier is a 24 hours a day, 7 days a week job, a perspective which reflects assumptions not found in most civilian jobs.

In a series of analyses designed to quantify OPTEMPO, WRAIR researchers identified number of work hours as a useful operational definition of workload. A careful examination of work hours finds that, consistent with civilian research, the relationship between work hours and health or performance is not always negative or necessarily direct. This relationship may change depending on which outcome is selected for study and whether the outcomes are measured concurrently with the stressor or after a significant amount of time has passed.

In studies at the WRAIR, researchers have found that work hours are linked with poorer health outcomes and that this link is exacerbated by lack of physical exercise and lack of sleep (Dolan, Adler, Thomas, Huffman, & Castro, 2001) or by the lack of job engagement (Britt, Castro, & Adler, 2002). It appears that although there may not be a strong linear relationship between work hours and negative outcomes, this relationship is exacerbated under certain conditions. This finding was exemplified by the relationship between work hours and perceived stress (Dolan & Castro, 2001). Similarly, in an analysis of data from 249 interviews, soldiers reported that although long work hours were difficult, the long work hours themselves were not perceived as stressful. Rather, it was the long work hours coupled with the lack of leadership or meaningful work that resulted in perceptions of stress.

OPTEMPO can also be operationalized in other ways as well. When OPTEMPO was defined as the perception of work overload, a negative relationship with performance outcomes was found (Thomas, Adler, & Castro, 2001). When OPTEMPO was defined through more objective measures, however, a positive relationship between performance and work hours, training days and other measures of workload emerged.

Not only is the way in which the stressor is operationalized important, but also when the outcome is measured is also important in understanding the link between stressor and outcome in the Soldier Adaptation Model. For example, Britt and Dawson (2003) found that perceptions of work overload, number of days in training, as well as hours worked, all predicted higher levels of work-family conflict when measured at the same time. When the same analysis was conducted predicting work-family conflict three months later, however, these OPTEMPO measures did not predict work-family conflict whereas measures of work climate (such as cohesion) did.

Predictability

Another work-related stressor of significance for military personnel is the issue of predictability. In the mid-1990s, a series of WRAIR studies conducted with U.S. military personnel on deployment in Bosnia found that one of the greatest pre-deployment stressors was not knowing when the departure date for deployment was and not knowing how long the deployment would last (e.g., Bartone, 1997). Some mission and policy changes have resulted in somewhat greater predictability for established peacekeeping

operations, but the issue of deployment date still remains a significant stressor to both soldiers and their families.

Predictability extends beyond the issue of deployment, however, to include more relatively mundane issues associated with garrison life. Qualitative results from a two-year study examining OPTEMPO found that soldiers repeatedly described stress from unpredictability associated with normal duty days. For example, soldiers often reported that they did not know when their duty day was over. In interviews, soldiers frequently described receiving last-minute requests resulting in the sense that they sat around all day, received orders just before they were scheduled to go home, and then had to stay late (Dolan & Castro, 2001). Soldiers responding to surveys who reported high levels of unpredictability were also more likely to want to leave the military than soldiers reporting low levels of unpredictability (Huffman, Adler, & Castro, 2000). Although the military attempts to institutionalize some degree of predictability by having a long-range training calendar, for many soldiers the day-to-day workload and work schedule remains unpredictable and stressful.

Role Stressors

In addition to workload and predictability, role stressors can also be a significant source of stress for military personnel. Role stressors occur when soldiers' missions are not consistent with their training. Several studies conducted by the WRAIR have found that job-training congruence is a priority for soldiers. For example, soldiers who receive their weekly "Sergeant's Time" training report higher job satisfaction and better psychological health than those who do not (Huffman, Adler, & Castro, 2000). Similarly, those soldiers who report working in their military occupational specialty also report higher job satisfaction than those who do not. Indeed, when soldiers lack proper training relevant to their job and when their mission is inconsistent with their professional identity, morale often suffers (e.g., Britt, 1998). Lack of role clarity is another area cited by Jex (1998) as well as other occupational stress researchers. This issue is most evident when soldiers deploy and find themselves confronted with uncertain mission objectives or rules of engagement. These stressors are described below as part of a set of stressors associated with the relatively unique military experience of deployment.

Interpersonal Conflict and Organizational Constraint

There are several other stressors that can be found in the occupational stress literature (Jex, 1998). Two occupational stressor categories that have been assessed recently in WRAIR research include within-group (or interpersonal) conflict and organizational constraints. In a survey of 373 U.S. soldiers stationed in Europe in April through June of 2001, both of these stressors, within-group conflict and organizational constraint, correlated negatively with perceptions of operational readiness ($r = -.12$, $p < .05$; $r = -.34$, $p < .01$) and positively with measures of depression ($r = .27$ and $.31$, $p < .01$, respectively) and general psychological distress ($r = .30$ and $.33$, $p < .01$, respectively). Such findings provide support to the framework proposed by Jex (1998) and demonstrate their importance in a military setting as well.

Specific Military Stressors

Training Stressors

Besides studies examining the impact of OPTEMPO and other stressors on soldier well-being and performance, the WRAIR has also embarked on a series of studies examining the impact of stressors on health and performance in a training environment. Although not all of the stressors in a training environment are unique to training, the training environment does represent a unique setting in the military. Results from studies conducted with Reserve Officer Training Corps (ROTC) cadets indicate that key stressors for cadets included role stress, performance concerns, and workload (Thomas & Wright, 2002; Thomas, McGurk, Bliese, & Ritzer, 2001). Each stressor demonstrated links to well-being and performance such that the greater the stress reported, the poorer the well-being and performance outcomes.

Another stressor that overlaps with general work stressors but is unique to the ROTC training environment is within-group conflict. Within-group conflict, broadly defined as disagreements, differences, or incongruencies within groups (Rahim, 1979), is negatively related to group performance (see Jex, 1998 for a review). In the ROTC training environment, cadets train together in groups but are evaluated as individuals on their potential to be future Army officers. Therefore, each cadet is in direct competition with the members of their own group. Results from this study revealed a negative relationship between within group conflict and psychological well-being at the beginning of the training cycle as well as at the end of the cycle. Interestingly, this relationship was stronger at the end of the training cycle as compared to the beginning. That is, cadets who reported more within-group conflict also reported less psychological well-being. In addition, within-group conflict was negatively related to cadet's overall performance rating; the more conflict reported, the lower the overall performance at the end of the training. Given that interpersonal conflict affects not just well-being but also performance, it emerges as an important stressor in the ROTC context. Given the correlates found in active-duty units mentioned above, interpersonal conflict appears to be an important stressor regardless of military environment.

Deployment Stressors

WRAIR has conducted studies in support of almost every major U.S. military deployment, including deployments to Saudi Arabia (Stuart & Bliese, 1998; Wright et al., 1995), Haiti (Halverson, Bliese, Moore, & Castro, 1995), Somalia (Gifford, Jackson, & DeShore, 1993), Bosnia (Bartone, 1997), and Kosovo (Castro, Bienvenu, Huffman, & Adler, 2000). In each of these studies, soldiers have been surveyed and interviewed about the stressors associated with the deployment. In all, deployment stressors involve both non-traumatic and potentially traumatic events.

Whether on a combat or peacekeeping mission, deployment life entails particular stressors that are reported by soldiers and that can correlate with lowered psychological and physical well-being. Common stressors include austere living conditions, boredom, family separation, and transitioning between deployment and home (Adler, Litz, & Bartone, in press). These stressors have been reported across a variety of deployments

although not all the deployments are the same. For example, U.S. soldiers deployed on Operation Joint Guard in Bosnia did not report significant stress from food or water problems (Ritzer, et al., 1999), whereas soldiers deployed to Somalia did (Miller & Moskos, 1995). Quality of life concerns include receiving mail, telephones, recreation and educational opportunities, and equitable pay relative to other militaries deployed to on the same operation. Deployments also involve the stressors associated with separation from family and the stressors associated with the transition to the deployed environment as well as the transition back to home station.

Other deployment-related stressors include uncertainty about the mission's objectives, the rules of engagement and particular Army policies (Bliese, Halverson & Schriesheim, 2002). The identification of stressors associated with military policies typically emerges from on-site interviews and observations. For example, during the deployment of U.S. soldiers to Kosovo, interviews revealed soldiers were stressed by the U.S. government policy that allowed Kosovar Albanians to keep their weapons beyond the original 90 days and also by the military policy that allowed the regular rotation of officers in the position of company commander throughout the course of the deployment (Adler, Dolan, & Castro, 2000).

In addition to the non-traumatic stressors associated with the deployed environment, soldiers also face direct threats to their safety and psychological well-being. Even during missions not originally intended as combat, U.S. soldiers have reported being shot at, encountering minefields, and dealing with unruly mobs. And although U.S. soldiers were not held hostage in the Balkans, numerous other nations report that their soldiers were held hostage while on U.N. peacekeeping duty in the Balkans (Adler, Litz, & Bartone, in press). Not all deployments are characterized by such violence but it is certainly one type of stressor associated with military deployments. Other potentially traumatic events such as exposure to death, mass graves and body parts, have also been reported in WRAIR studies. In a survey of U.S. soldiers deployed to Kosovo, for example, 45% of soldiers reported smelling the stench of decomposing bodies, and 38% reported handling or uncovering dead bodies (Adler, Dolan, & Castro, 2000). Other threats to well-being include exposure to unexploded ordnance. During the first year of the U.S. deployment in support of the NATO mission in Bosnia, for example, 11% of soldiers surveyed reported handling unexploded ordnance (Castro, Bartone, Britt, & Adler, 1998). Exposure to these kinds of stressors is important in understanding soldier adjustment following the deployment. Recent analysis of soldiers deployed to Kosovo has linked the amount of exposure to such deployment-related incidents as dealing with death, threats to one's safety and unruly crowds, with poorer outcomes at post-deployment, including reduced sleep hours, increased use of conflict-based tactics, and greater alcohol consumption (Adler, Dolan, & Castro, 2001). As can be gleaned from the discussion of deployment stressors, it is important to note that each deployment has unique contextual stressors such as the stability of the mission, unit policies, and exposure to death and danger. The fact that deployments are associated with a unique constellation of stressors is illustrated by a case study presented below.

Integrating Stressors in the WRAIR Model

Homeland Defense

In one of the most recent WRAIR studies examining soldier stressors, researchers (Bliese & Durand, 2001; Bliese, Stetz, Durand, & Castro, 2002; 2003) surveyed 385 military police (MP) soldiers supporting Homeland Defense, the domestic response to the terrorist attacks of September 11, 2001. In addition interviews were conducted with a number of focus groups in this sample. This project differed from previous efforts because the military personnel studied were composed not only of active duty soldiers ($n = 144$) but also of Reserve and National Guard (reserve soldiers; $n = 241$). In addition, both active duty and reserve soldiers were deployed and studied at the following two locations: the Pentagon ($n = 220$) and Fort Stewart ($n = 165$), Georgia. In both locations, soldiers deployed in order to guard military installations. Despite the unique sample, the approach reflects the methods used in much of WRAIR's research on human dimensions: the use of multiple methods to assess the stressors, moderators, and outcomes associated with real-world missions.

In the Homeland Defense study, most of the soldiers were Caucasian (60%), married (57%), male (82%), non-commissioned officers (52%), and between 23 and 40 years old (59%). Several stressors that have been identified in previous WRAIR studies were again highlighted in this study. Findings revealed that some of the major stressors these soldiers faced were unpredictability (i.e. uncertain date of deactivation or the end of the mission), work overload, and inter-group conflict. As would be expected, each of these stressors was negatively correlated with job satisfaction, perceived mission readiness and intentions to stay in the Army (Table 1).

Perhaps more interestingly, however, this particular sample had some unique stressors that emerged during interviews with soldiers. For instance, reserve soldiers raised issues related to procedural injustice as being a primary stressor associated with the initial and ongoing activation. That is, many of the units were activated very quickly, and there was some confusion about the individual requirements for activation. As a consequence, soldiers perceived that some individual unit members avoided being activated. This translated into a sense of injustice or unfairness associated with the activation among some soldiers. Research at WRAIR has shown that procedural justice impacted long-term strains such as well-being. To our knowledge, this study is one of the first to study procedural justice as a stressor in an occupational stress model.

Another interesting and unique stressor that emerged was completely unexpected. Two of the reserve units were activated and sent to locations close to home. In some particular cases, soldiers lived within commuting distance. However, because soldiers were on activation status they were not permitted to go home very often. Essentially soldiers were restricted to the barracks except when on leave or pass status. This arrangement reportedly exacerbated work-family conflict. Families knew that their soldiers were physically close; however, the soldiers could not be counted on to assist in normal family situations nor in times of non-critical need. Soldiers in this situation

indicated that the proximity to home added considerable stress and suggested that it would have been easier to have been more physically removed from the family.

As a final example, reserve units faced pay issues that are rarely seen in studies of active duty. Pay is an interesting dynamic because there were large differences in pay prior to activation. Consequently, when soldiers were activated, some made more money than when on civilian status while others made less. Analyses of follow-up data from the study estimated that one-fourth and one-third of this sample had ensuing financial problems associated with the activation.

Thus, the study of stressors revealed that typical stressors such as work overload, unpredictability and intra-group conflict were present and related to important outcomes. It is clear, however, that a complete understanding of stressors in the context of homeland defense requires expanding the definition of stressors beyond those traditionally examined.

Soldier Adaptation Model

As the Soldier Adaptation Model is refined, military stressors will continue to be a critical area for research. It may be that additional stressor categories or mission-specific stressors are identified. Regardless, however, it is unlikely that researchers will choose to include an exhaustive list of stressors in any one project. Thus, there is a balance required between the identification of stressors for use in a comprehensive Soldier Adaptation Model and the selection of stressors for use in any particular study. The judicious selection of key military occupational stressors is a necessary step for refining the Soldier Adaptation Model through further research. Of course, stressors are only one part of the model. Key military outcomes and moderators are important components of the model but beyond the scope of this paper.

In terms of continuing research that identifies military stressors, several tasks remain priorities: 1) refine measures of stressors for use across operations and environments; 2) continue to use a combination of interview and survey data in order to identify mission-specific stressors and their scope; and 3) regard the occupational stressors associated with military service within a multidimensional framework that includes each military environment. By combining the civilian occupational stress concepts with the unique challenges confronting military personnel, a comprehensive military model of stress and its consequences can be developed.

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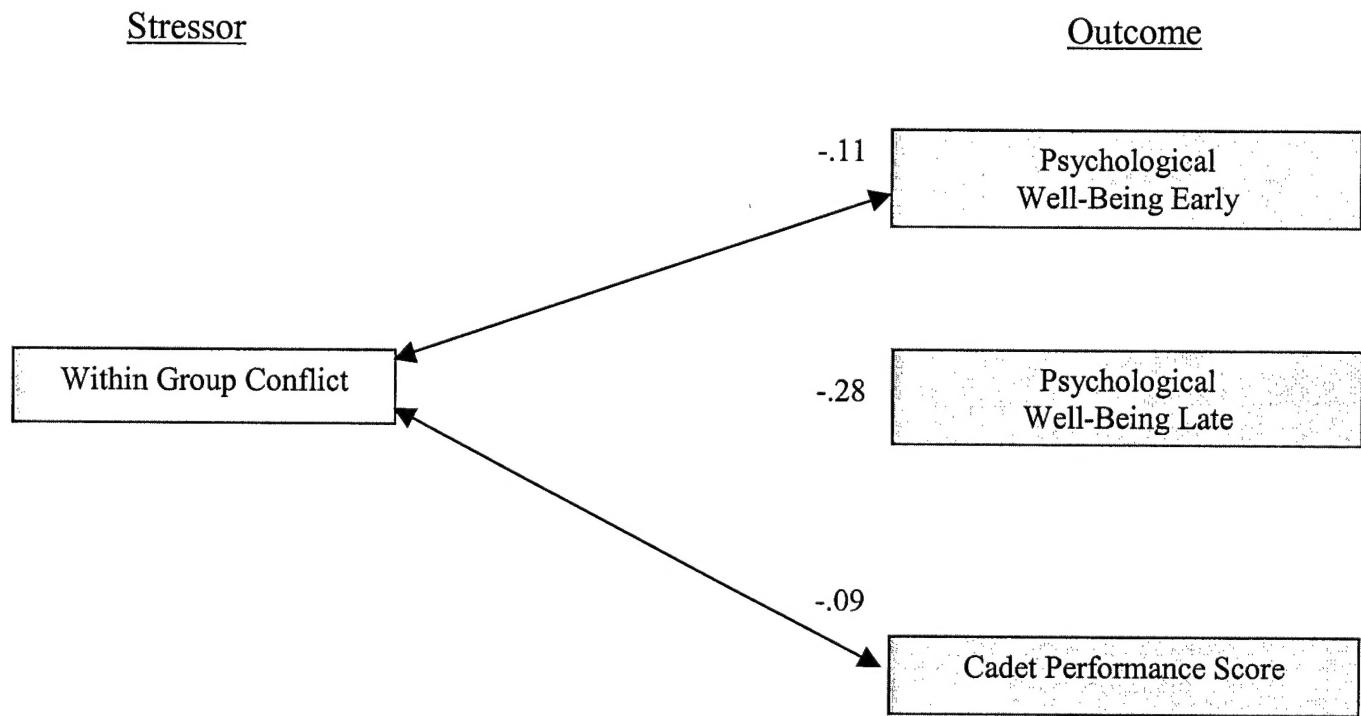
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Figure 1. Group Conflict, Well-Being, and Performance in ROTC Sample.



*All Correlations Significant at $p. < .01$.

Table 1

Means, standard deviations, and correlations among the measured variables in Homeland Defense Study (N=385).

Variable	M	SD	1	2	3	4	5	6
1. Unpredictability	3.13	.88	-----					
2. Work Overload	3.18	.95	.43*	-----				
3. Inter-group Conflict	2.91.	.94	.38*	.39*	-----			
4. Combat Readiness	3.02	.98	-.42*	-.29*	-.37*	-----		
5. Job Satisfaction	3.40	1.11	-.43*	-.33*	-.37*	.44*	-----	
6. Career Intentions	3.50	2.02	-.28*	-.24*	-.23*	.20*	.46*	-----

*Correlation is significant at the $p < .05$ level (2-tailed);